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Use and non-use of a nationwide patient portal – a survey among pharmacy customers

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Abstract

Objectives A nationwide patient portal (My Kanta) for viewing electronic prescriptions and health data has been phased in since 2010 in Finland. This study aimed to study how commonly Finnish pharmacy customers use My Kanta, the factors related to My Kanta use, the main reasons for non-use and how non-users would like to monitor their medication and health information.

Methods A survey was conducted among adult pharmacy customers purchasing prescription medicines for themselves or for their child <18 years. Questionnaires (N = 2866) were distributed from 18 pharmacies across Finland. Open-ended questions were analysed qualitatively. Quantitative analyses included frequencies, Chi-square tests, Fisher's exact tests, t-tests and logistic regression analysis.

Key findings In total, 994 (34.7%) questionnaires were included. Most (82.5%) adult pharmacy customers used My Kanta. Use of the service was associated with use of the internet to search for health-related information (OR: 8.82, 95% CI: 4.65–16.74), active internet use (OR: 7.30, 95 %: CI 3.54–15.08), living in Northern (OR: 4.35, 95% CI: 1.75–10.82) or Eastern (OR: 3.25, 95% CI: 1.41–7.48) parts of Finland, and the increasing number of currently used regular prescription medicines (OR: 1.16, 95% CI: 1.01–1.34). The main reasons for non-use were lack of need and tools. Non-users reported physician/health centres and pharmacies as their preferred sources of medication and health information.

Conclusions Most Finnish pharmacy customers use the My Kanta nationwide patient portal. The strongest predictors for use are factors related to internet use. Some pharmacy customers do not use My Kanta despite having the necessary means. The main reason for non-use is a lack of need. Customers unable to use My Kanta want to monitor their medication and health information via healthcare professionals.

Keywords electronic prescription; internet; patient portal; pharmacy customer; survey

Introduction

Patient portals displaying electronic prescriptions (e-prescriptions) and health records have been introduced in order to increase patients' empowerment and their responsibility for their own health and well-being.[1–11] Patient engagement is a critical component of safe patient-centred health care.[12] Patient portals often cater for patients of a specific organisation, with a particular disease, or living in a specific region,[1–6] while nationwide portals are rare.[7–11,13] However, the Global Strategy on Digital Health encourages WHO member states to develop nationwide digital health strategies and systems.[14]

Studies about the use of patient portals originate mainly from the USA and the Netherlands, with portals administered by one organisation or region.[1–6,15–19] Increasing the low adoption rates of patient portals requires identifying non-users.[4,5] Several studies investigating user characteristics related to portal use have produced contradictory results.[1–5,15–18] The use of the internet is a requirement for patient portal use. All people do not use the internet but other barriers to use of patient portals have been rarely investigated.[1–3,5,19] There is no information on factors related to using nationwide portals.

In Finland, a nationwide patient portal (My Kanta) and e-prescriptions were phased in by law since 2010.[20–22] These form part of the nationwide digital health care and social

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welfare Kanta services for health care professionals and the public.[13,20] My Kanta is available for everyone with a Finnish identity number and an ID for electronic services, such as online banking codes.[23] This portal includes information on all prescriptions and health data recorded in both public and private health care (Table 1).[23] Two thirds of Finnish adults use My Kanta.[24] The aim of My Kanta is to enhance patients' active involvement and increase their opportunities to take care of their medication and health.[25] Five years after the introduction of this portal, a study showed that a substantial proportion of pharmacy customers were unfamiliar with My Kanta; of those who knew the service, one in four disregarded it for unknown reasons.[26]

The aim of this study was to investigate how commonly My Kanta is used by pharmacy customers, the factors related to use of the service, the main reasons for non-use and how non-users would like to monitor their medication and health information.

Methods

Study setting

In spring 2019, 18 community pharmacies in six regions across mainland Finland handed out questionnaires.[27] One University Pharmacy branch, one big city pharmacy and one small rural pharmacy were recruited from each region using convenience sampling. The number of questionnaires supplied to each pharmacy was based on the number of prescriptions dispensed annually by the pharmacy and varied between 40 and 320. The study focused on customers 18 or older purchasing prescription medicines for themselves or for their child under 18. After dispensing prescription medicine, pharmacists were instructed to inform the customer about the study and offer a questionnaire. Customers filled in the questionnaires at home and posted them in return envelopes to the research group. Pharmacies distributed the questionnaires as long as they had forms for a maximum of two weeks. The research group was informed about the number of remaining questionnaires for response rate calculation. Pharmacies were not required to keep a record of customers refusing to participate. Anonymous recruitment meant no reminders could be sent. Pharmacies distributed 2866 questionnaires.

Table 1 Features of My Kanta.[23,41]

Viewing e-prescriptions
- Name, dosage and indication for use of medicine.
- Prescription date and the prescribing organisation, name of prescriber.
- Valid date of prescription.
- Whether there is any medication outstanding.
- Purchase events.
- Prescription renewals.
- Health care units and pharmacies who have processed the e-prescription's information.

Requesting a prescription renewal

Printing out a summary of e-prescriptions

Viewing health data
- Patient records and diagnoses.
- Critical risk factors.
- Laboratory tests and x-ray examinations.
- Referrals.
- Health and care plan.
- Medical certificates and reports.
- Healthcare units who have viewed the health data.

Viewing and removing personal well-being data recorded via well-being applications
- Weight, steps and activity during the day.

Giving consent to or limiting disclosure of personal data

Saving a living will and organ donation testament

Acting on behalf of dependants under 10 years of age
- Viewing e-prescriptions and health data.
- Requesting a prescription renewal.
- Consenting to disclosure of dependant's data.

Questionnaire

The four-page questionnaire consisted of 22 structured, Likert-scale and open-ended questions. The form had three parts. The first part was for all respondents and concerned background information, the second part was for respondents who used My Kanta, and the third part for respondents who did not use My Kanta. The questionnaire was designed on the basis of previous studies and My Kanta pages.[1–5,23,26,28,29] It was tested for face validity by three researchers experienced in designing questionnaire surveys. The questionnaire and data collection procedure were then piloted at one pharmacy. After customers filled in the questionnaire, they were interviewed by researchers about the intelligibility of the questions, leading to minor revisions.

This paper reports the results from the first and third parts of the questionnaire. The use of My Kanta was surveyed with a structured question: 'Do you use My Kanta to browse your prescription and/or health information'?. The response options were as follows: 'Yes, I do', 'I have used it, but I am not going to use it any more' and 'I have never used it'. The questions about reasons for non-use and ways to monitor information were open-ended: 'What are the main reasons why you do not use My Kanta'? and 'How would you like to monitor your prescription and health information'?. Background information concerned demographics (gender, age, education, region), internet use, use of the internet to search for health-related information, and whether the respondent had an ID for electronic services, any chronic diseases diagnosed by a physician, and regularly used prescription medicines. Background information was obtained by means of structured questions, except for two open-ended questions (age and number of regularly used prescription medicines).

Data analysis

The data analysis included quantitative and qualitative phases. In the quantitative phase, differences between respondents and relationships between respondent characteristics and the use of My Kanta were examined using the Chi-square test, Fisher's exact test and *t*-test. Statistical significance was determined as $P < 0.05$. IBM SPSS Statistics

for Windows (Version 25.0 SPSS Inc., Chicago, IL, USA) was used in the analyses.

Bivariate logistic regression analysis was used to determine the adjusted association between respondent characteristics and My Kanta use. Logistic regression analysis was conducted among respondents who had means to use the service, that is, the respondent used the internet and had an ID for electronic services (see Introduction). Thus, respondents who responded that they do not use the internet or do not have an ID for electronic services were excluded from the analysis. In addition, the respondents who did not know whether they have an ID for electronic services or who had a missing response regarding the use of internet or having an ID for electronic services were excluded. In the analysis, My Kanta use was compared with non-use of the service; response options 'I have used it, but I am not going to use it any more' and 'I have never used it' were combined into non-use. Covariates in the analysis were gender, age, education, region, internet use, use of the internet to search for health-related information, existence of any chronic disease and the number of currently used regular prescription medicines. Age was classified into four groups: 18–34, 35–59, 60–74 and ≥75. The response 'Don't know' concerning chronic diseases diagnosed by a physician was considered a missing value. The number of currently used prescription medicines served as a continuous covariate. The results of the analysis are expressed as odds ratios (ORs) with 95% confidence intervals (95% CIs).

In the qualitative phase, responses to the open-ended questions were encoded and categorised using inductive content analysis.[30] The responses were initially stored in Word 2016 (Microsoft Corporation, Redmond, WA, USA) and studied to provide familiarity with the data as a whole. An analysis unit could be a word, a sentence, or a group of sentences describing a point related to the question. A response containing more than one such point was separated into several analysis units. These units were then simplified and sorted into emerging subcategories, which were named based on content. Similar subcategories were unified into main categories, and the main categories also were named based on content. One researcher (MS) conducted the inductive content analysis but continuously discussed it with the research group. Finally, the data were saved into SPSS and analysed quantitatively using frequencies.

Ethical statement

According to the national ethical instructions for research,[31] this survey does not require ethical approval. However, approval was conducted by the Committee on Research Ethics of the University of Eastern Finland on the request of the funding organisation (statement 23/2018). Participation in this study was voluntary; answering the questionnaire and posting it to the research group was regarded as informed consent to participate. Pharmacy owners gave their consent to distribute questionnaires at their pharmacies.

Results

Study population

In total, 996 questionnaires were returned, two of which were blank (Figure 1). Consequently, 994 questionnaires (34.7%) were included in the study. Most respondents (69.4%) were female (Table 2). Respondents' ages ranged from 18 to 99 years (mean 62 years and median 66 years).

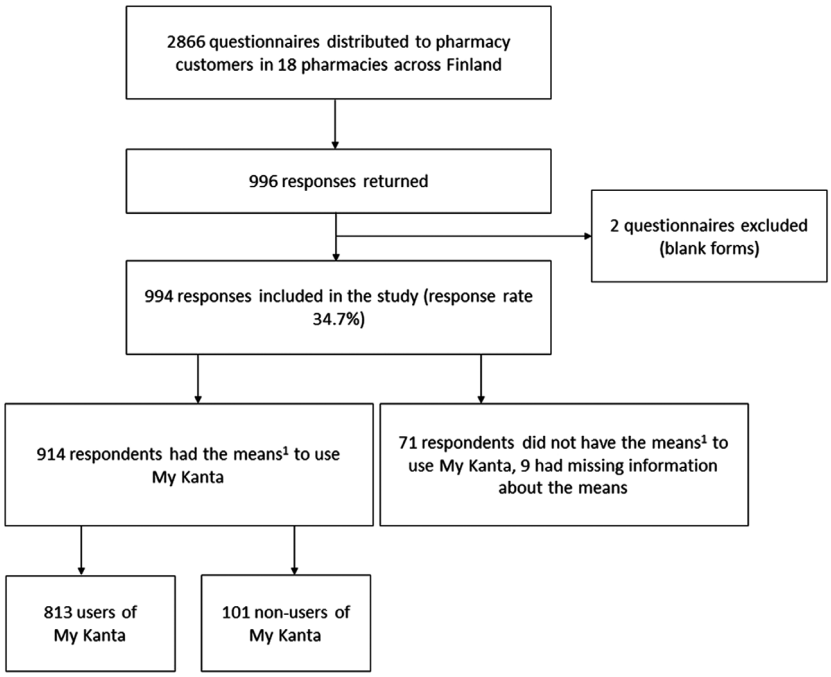

Figure 1 Study flow.[1]Means, that is respondent used the internet and had an ID for electronic services.

Table 2 Characteristics and differences between respondents who had and who did not have the means to use My Kanta

	All (n = 994[1]) n (%)	Respondents with means[2] to use the service (n = 914) n (%)	Respondents without means[2] to use the service (n = 71) n (%)	P-value
Gender (n = 990[3]/911[3]/70[3])				
Female	687 (69.4)	632 (69.4)	48 (68.6)	0.888
Male	303 (30.6)	279 (30.6)	22 (31.4)	
Age (years) (n = 958[3]/881[3]/68[3])				
18–34	54 (5.6)	54 (6.1)	0 (0.0)	<0.001
35–59	269 (28.1)	268 (30.4)	1 (1.5)	
60–74	467 (48.7)	435 (49.4)	25 (36.8)	
75-	168 (17.5)	124 (14.1)	42 (61.8)	
Education (n = 994/914/71)				
Basic education	185 (18.6)	148 (16.2)	34 (47.9)	<0.001
Vocational degree	421 (42.4)	387 (42.3)	28 (39.4)	
Secondary school graduate	102 (10.3)	101 (11.1)	1 (1.4)	
Lower university degree	153 (15.4)	147 (16.1)	6 (8.5)	
Higher university degree	133 (13.4)	131 (14.3)	2 (2.8)	
Region (n = 992[3]/912[3]/71)				
Southern Finland	135 (13.6)	125 (13.7)	9 (12.7)	0.643
Southwestern Finland	144 (14.5)	132 (14.5)	12 (16.9)	
Western and Central Finland	192 (19.4)	174 (19.1)	17 (23.9)	
Eastern Finland	224 (22.6)	206 (22.6)	15 (21.1)	
Northern Finland	222 (22.4)	204 (22.4)	16 (22.5)	
Lapland	75 (7.6)	71 (7.8)	2 (2.8)	
Internet use (n = 987[3]/914/70[3])				
Daily or on several days a week	851 (86.2)	842 (92.1)	7 (10.0)	<0.001
Once a week or less often	79 (8.0)	72 (7.9)	6 (8.6)	
Not at all	57 (5.8)	0 (0.0)	57 (81.4)	
Internet use to search for health-related information (n = 991[3]/911[3]/71)				
Yes	842 (85.0)	830 (91.1)	6 (8.5)	<0.001
No	149 (15.0)	81 (8.9)	65 (91.5)	
ID for electronic services (n = 990[3]/914/70[3])				
Yes	931 (94.0)	914 (100.0)	13 (18.6)	<0.001[4]
No	56 (5.7)	0 (0.0)	56 (80.0)	
Does not know	3 (0.3)	0 (0.0)	1 (1.4)	
Chronic diseases diagnosed by a physician (n = 982[3]/903[3]/70[3])				
Yes	823 (83.8)	753 (83.4)	61 (87.1)	0.016
No	140 (14.3)	135 (15.0)	5 (7.1)	
Does not know	19 (1.9)	15 (1.7)	4 (5.7)	
Current use of regular prescription medicines (n = 942[3]/868[3]/65[3])				
0	101 (10.7)	97 (11.2)	3 (4.6)	0.343
1–2	315 (33.4)	291 (33.5)	21 (32.3)	
3–5	372 (39.5)	341 (39.3)	26 (40.0)	
6–9	128 (13.6)	115 (13.2)	13 (20.0)	
10-	26 (2.8)	24 (2.8)	2 (3.1)	
Mean number of medicines (standard deviation)	3.3 (2.8)	3.3 (2.8)	3.9 (2.5)	0.095
My Kanta use (n = 994/914/71)				
Yes	820 (82.5)	813 (88.9)	0 (0.0)	<0.001
Has used but is not going to use it any more	21 (2.1)	18 (2.0)	3 (4.2)	
Has never used	153 (15.4)	83 (9.1)	68 (95.8)	

[1]Includes 9 respondents with missing information about the means to use the service.
[2]Means, that is respondent used the internet and had an ID for electronic services.
[3]Some respondents did not answer the question.
[4]Comparison between responses 'Yes' and 'No'.

Of all respondents, 92.0% had the means to use My Kanta, and they were younger, more educated, and had a chronic disease less often than respondents who did not have the means.

Factors related to the use of My Kanta among respondents with the means to use the service

Most respondents who had the means to use My Kanta used the service (88.9%) (Table 2). Users and non-users differed

from each other by internet use and region (Table A1 in Appendix 1).

In the logistic regression analysis, use of the internet to search for health-related information had the strongest association (OR: 8.82, 95% CI: 4.65–16.74) with the use of My Kanta (Table 3). More active use of the internet was also associated with using My Kanta (OR: 7.30, 95% CI: 3.54–15.08, for use daily or on several days a week compared to use less often). Compared to respondents from Southern Finland, respondents from Eastern Finland (OR: 3.25, 95% CI: 1.41–7.48) and Northern Finland (OR: 4.35, 95% CI: 1.75–10.82) were more likely to use My Kanta. The odds of using My Kanta increased by 16% for each additional currently used regular prescription medicine (OR: 1.16, 95% CI: 1.01–1.34).

The main reasons for non-use of My Kanta

Almost all non-users (94.8%) reported at least one reason for not using the service. Non-users with the means most commonly stated that they did not need to use the service (60.4%) (Table 4). They also reported having difficulty using the service (22.9%) or were unfamiliar with it (16.7%). Non-users without the means said they did not use the service because they lacked the tools (55.2%). Respondents in this group also had difficulty using the service (17.9%) or were unfamiliar with it (14.9%).

Respondents who stated they had no need to use My Kanta reported having no information to monitor, monitoring their information in other ways or experiencing no need to use it. Difficulty using the service included the inability to use a computer, the internet or My Kanta. Unfamiliarity with the service included reasons such as not knowing the service at all or having heard about it but not having familiarised oneself with it. Lack of tools included reasons such as not having or using a computer, smartphone, internet or ID for electronic services. Some non-users had the tools, but either these were not working or they did not want to use them.

How to monitor prescription and health information

Of all non-users of My Kanta, most (68.4%) reported at least one way they would like to monitor their prescription and health information. Almost a third (29.3%) of non-users with the means to use My Kanta reported that they would like to monitor information via My Kanta (Table 5). They explained that they should familiarise themselves with the service, they would like to learn to use it, or they would use the service when necessary. A pharmacy (26.7%) and physician/health centre (24.0%) were also commonly reported information sources. Non-users without the means

Table 3 Logistic regression analysis of respondents' characteristics associated with My Kanta use (n = 809[1])

	Adjusted OR (CI 95%)
Gender	
Male	1.00
Female	1.28 (0.73–2.25)
Age (years)	
18–34	1.00
35–59	0.69 (0.22–2.19)
60–74	0.97 (0.30–3.09)
75-	1.48 (0.38–5.79)
Education	
Basic education	1.00
Vocational degree	1.45 (0.69–3.04)
Secondary school graduate	1.61 (0.54–4.83)
Lower university degree	1.29 (0.51–3.25)
Higher university degree	0.76 (0.31–1.84)
Region	
Southern Finland	1.00
Southwestern Finland	1.54 (0.68–3.47)
Western and Central Finland	2.05 (0.92–4.59)
Eastern Finland	3.25 (1.41–7.48)
Northern Finland	4.35 (1.75–10.82)
Lapland	1.90 (0.69–5.21)
Internet use	
Once a week or less often	1.00
Daily or on several days a week	7.30 (3.54–15.08)
Internet use to search for health-related information	
No	1.00
Yes	8.82 (4.65–16.74)
Chronic diseases diagnosed by a physician	
No	1.00
Yes	1.66 (0.83–3.33)
Current use of regular prescription medicines[2]	1.16 (1.01–1.34)

[1]Respondents who had the means to use the service were included in the analysis (n = 914), of whom 105 were excluded due to the missing covariate values.
[2]Per additional medicine.

Table 4 The main reasons[1] why respondents did not use My Kanta

	All non-users (n = 165[2]) n (%)	Non-users with means to use the service (n = 96[3]) n (%)	Non-users without means to use the service (n = 67[4]) n (%)
No need	68 (41.2)	58 (60.4)	9 (13.4)
Lack of tools	47 (28.5)	8 (8.3)	37 (55.2)
Difficulties in use	34 (20.6)	22 (22.9)	12 (17.9)
Unfamiliarity with the service	26 (15.8)	16 (16.7)	10 (14.9)
Old age/Physical limitations	13 (7.9)	4 (4.2)	9 (13.4)
Distrust of the system	10 (6.1)	9 (9.4)	1 (1.5)
Other	11 (6.7)	7 (7.3)	3 (4.5)

[1]Open-ended question. One answer might contain more than one reason.
[2]All respondents (n = 994) were included, of whom 174 were non-users and 165 answered the question.
[3]Respondents who had the means to use the service (n = 914) were included, of whom 101 were non-users and 96 answered the question.
[4]Respondents who did not have the means to use the service (n = 71) were included, of whom all were non-users and 67 answered the question.

stated that their preferred ways of monitoring their information are through a physician/health centre (47.6%) or pharmacy (38.1%).

Discussion

Most (82.5%) Finnish pharmacy customers surveyed used My Kanta. The use of service has increased significantly since 2015 (45.7%) when My Kanta use among pharmacy customers was last studied.[26] In the present study, My Kanta use was more common than among the Finnish adult population in general (63%).[24] This may result from selecting adult pharmacy customers purchasing prescription medicines as the study population because these were potential My Kanta users. In addition, users of the service may have been more interested in participating in the study. Correspondingly, internet use and having online banking IDs were more common in the present study than in the Finnish population in general; according to the Official Statistics of Finland, 89% of adults aged 16–89 use the internet and 83% use online banking (i.e. have an ID for e-services),[32] whereas in the present study, the corresponding proportions were 94% and 94%, respectively.

Searching for health-related information on the internet was the strongest predictor for My Kanta use. Logically, people who search for health-related information on the internet also use patient portals because these provide access to information about their own medicines and health. The association between searching for health information on the internet and portal use has been rarely studied; however, in one study, searching the internet for information about one's own illness was associated with patient portal use.[5] In contrast, the association between health literacy and portal use has been more studied, although with conflicting results.[4,15,18] Studies are needed to determine whether those who use patient portals have adequate health literacy skills to enable them to understand the information provided by these services.

The greater the number of regularly used prescription medicines, the more likely customers were to use My Kanta. In a previous Finnish study, pharmacy customers said that My Kanta provides a good summary of their prescribed medication and facilitates the monitoring of e-prescription information.[26] Understandably, an increasing number of prescriptions makes keeping up-to-date with one's medication more difficult, leading to an increased need to use the service. Furthermore, renewal requests might increase use of the service among regular users of prescription medicines.[33] In 2018, 2.1 million renewal requests were made by patients via My Kanta.[24]

The present study showed some regional differences in using My Kanta. People living in Northern and Eastern parts of Finland were more likely My Kanta users. This result is partly in line with the statistics of Kanta services according to which My Kanta is mostly used in Northern, Southern, and Eastern parts of Finland.[24,34] Reasons for regional differences remain unclear but, in the present study, may partly result from regional differences in pharmacists' activity in delivering questionnaires. In addition, morbidity in Finland is the highest in Northern and Eastern parts of Finland.[35] There may also be regional differences in how actively healthcare units and pharmacies have informed patients about My Kanta and its use.[34]

In contrast to previous studies about patient portals,[1,2,5,15,17,18,36] the present study showed that gender, age, education and the existence of chronic diseases were not associated with My Kanta use. However, the analysis of factors related to My Kanta use was conducted among respondents who had the means to use the service. Respondents without the means, who were older, less educated and chronically ill, were therefore excluded from the analysis. The digital divide, that is disparities in access to technology, is a widely known challenge of digitalisation.[1] People unable to use information technology must be taken into consideration when developing digital services[37]; they need alternative ways to monitor health and medication information. Oral information from healthcare professionals may be enough for some people, whereas printed summaries about e-prescriptions and health information may be necessary for others. Healthcare professionals have an important role to play in identifying these customers so that the necessary information can be accurately targeted. Currently, healthcare units can print out information about health data and e-prescriptions to patients from patient data systems, but printing practices vary between units. Developing congruent practices to print corresponding information as in My Kanta for patients who do not use My Kanta might ensure patients' equality to get written information.

Around 10% of customers who had the means to use My Kanta did not use it, but still reported My Kanta as their preferred way to monitor their health and medication information. They most commonly reported that they had no need to use the service. However, it is unclear whether these people really were without the need or whether they

Table 5 Information sources[1] reported by non-users on how to monitor prescription and health information

	All non-users (n = 119[2]) n (%)	Non-users with means to use the service (n = 75[3]) n (%)	Non-users without means to use the service (n = 42[4]) n (%)
Physician/health centre	38 (31.9)	18 (24.0)	20 (47.6)
Pharmacy	36 (30.3)	20 (26.7)	16 (38.1)
My Kanta	26 (21.8)	22 (29.3)	4 (9.5)
Paper	24 (20.2)	14 (18.7)	8 (19.0)
Other	23 (19.3)	14 (18.7)	8 (19.0)

[1]Open-ended question. One answer might contain more than one source.
[2]All respondents (n = 994) were included, of whom 174 were non-users and 119 answered the question.
[3]Respondents who had the means to use the service (n = 914) were included, of whom 101 were non-users and 75 answered the question.
[4]Respondents who did not have the means to use the service (n = 71) were included, of whom all were non-users and 42 answered the question.

were unaware that they should monitor their medication and health information. Patients perceiving themselves as subordinates to healthcare professionals may be a major barrier for patient engagement and involvement in their own care.[12] It is therefore important that patients know the purpose of patient portals and are encouraged to participate actively in their own health care.

Difficulty using the service and unfamiliarity with it were also reported as barriers to My Kanta use, which is in line with previous studies.[2,3,5,19] Guidance is required in order to increase the use of My Kanta. The Kanta services have produced an online course about My Kanta,[38] and patients who find it difficult to use could be better informed about this course by healthcare professionals. In addition, a mobile application could encourage people to sign into the portal and increase its use because mobile phones are the most commonly used device for internet use in Finland.[32] Computers at pharmacies or healthcare centres may cater for those who need assistance with the use of a computer and My Kanta. Although unfamiliarity with My Kanta has notably decreased since 2015 when 37.9% of pharmacy customers did not know the service at all,[26] the present study suggests that the information given about the service has not reached all citizens and that its dissemination should continue.

The present study has both strengths and limitations. The study sample was large and included pharmacy customers across Finland. The goal of reaching both My Kanta users and non-users was also achieved. However, the response rate was lower than in surveys conducted with the same method earlier (40%−44%).[26,39] The study lacked information about the customers refusing to participate in the study. Therefore, the real response rate may be even lower than reported. There was also no information about the customers not returning the questionnaire. In addition, comparable statistics about adult pharmacy customers' characteristics are lacking. Compared to those who have received reimbursement for medicine costs under the Health Insurance Scheme, the respondents were older and more commonly women.[40] However, the study population was similar to that used in surveys among pharmacy customers conducted using the same method about generic substitution and e-prescriptions in Finland.[26,39] The questionnaire lacked any validated measures, but some questions were the same as in previous studies.[2,3,26,28,29]

Conclusions

Most Finnish pharmacy customers use My Kanta. Searching for health-related information on the internet and active internet use are the strongest predictors for use of the service. However, some customers do not use My Kanta although they have the means to do so. The most common reason for non-use is a lack of need. Guidance and information about the service and its benefits are needed in order to encourage more people to adopt it. Some customers are unable to use My Kanta and want to monitor their medication and health information via healthcare professionals. To establish equality with users of the service, these customers need to be identified and given oral and written information about their medication and health.

Declarations

Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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Authors' contributions

MS, EL, RA and JT designed the study and collected the data. MS conducted the data analyses and drafted the manuscript. EA participated in designing the statistical analyses. All authors participated in discussing the analyses and findings, critically revised the manuscript, and read and approved the final version to be submitted.

References

1. Yamin CK *et al*. The digital divide in adoption and use of a personal health record. *Arch Intern Med* 2011; 171: 568–574.
2. van der Vaart R *et al*. Impact of patient-accessible electronic medical records in rheumatology: Use, satisfaction and effects on empowerment among patients. *BMC Musculoskelet Disord* 2014; 15: 102.
3. Turvey C *et al*. Blue Button use by patients to access and share health record information using the Department of Veterans Affairs' online patient portal. *J Am Med Inform Assoc* 2014; 21: 657–663.
4. Smith SG *et al*. Disparities in registration and use of an online patient portal among older adults: Findings from the LitCog cohort. *J Am Med Inform Assoc* 2015; 22: 888–895.
5. Ronda MC *et al*. Reasons and barriers for using a patient portal: Survey among patients with diabetes mellitus. *J Med Internet Res* 2014; 16: e263.
6. Goel MS *et al*. Disparities in enrollment and use of an electronic patient portal. *J Gen Intern Med* 2011; 26: 1112–1116.
7. Sundhed.dk. *Background*. https://www.sundhed.dk/borger/service/om-sundheddk/ehealth-in-denmark/background/ (accessed 30 October 2019).
8. Helsenorge.no. *Services at helsenorge.no*. https://helsenorge.no/other-languages/english/services-at-helsenorge-no#Which-services-are-available? (accessed 30 October 2019).
9. Eesti.ee. Medical care. https://www.eesti.ee/en/health-and-care/health-and-medical-care/medical-care/ (accessed 30 October 2019).
10. eHälsomyndigheten. *Welcome to the Swedish eHealth Agency*. https://www.ehalsomyndigheten.se/other-languages/english/ (accessed 30 October 2019).
11. OECD. VERA, the National Citizen Health Portal. *Observatory of Public Sector Innovation*. https://www.oecd.org/governance/observatory-public-sector-innovation/innovations/page/verathenationalcitizenhealthportal.htm (accessed 1 November 2019).
12. World Health Organization. *Patient Engagement: Technical Series on Safer Primary Care*. Geneva: World Health Organization 2016.

13. Kanta Services. *What are the Kanta Services*. https://www.kanta.fi/en/web/guest/what-are-kanta-services (accessed 20 September 2019).
14. World Health Organization. *Global Strategy on Digital Health*. Draft 26.3.2019. Geneva: World Health Organization 2019.
15. Hoogenbosch B *et al*. Use and the users of a patient portal: cross-sectional study. *J Med Internet Res* 2018; 20: e262.
16. Jhamb M *et al*. Disparities in electronic health record patient portal use in nephrology clinics. *Clin J Am Soc Nephrol* 2015; 10: 2013–2022.
17. Ancker JS *et al*. Use of an electronic patient portal among disadvantaged populations. *J Gen Intern Med* 2011; 26: 1117–1123.
18. Bauer AM *et al*. Patient-oriented health technologies: patients' perspectives and use. *J Mob Technol Med* 2017; 6: 1–10.
19. Goel MS *et al*. Focus on personal health records: patient reported barriers to enrolling in a patient portal. *J Am Med Inform Assoc* 2011; 18(Suppl 1): i8–i12.
20. Jormanainen V. Large-scale implementation and adoption of the Finnish national Kanta services in 2010–2017: a prospective, longitudinal, indicator-based study. *FinJeHeW* 2018; 10: 2010–2017.
21. Finlex. *Act on the Electronic Processing of Client Data in Social and Health Care Services 159/2007*. https://www.Finlex.fi/fi/laki/ajantasa/2007/20070159 (accessed 3 October 2019) [in Finnish].
22. Finlex. *The Act on Electronic Prescription 61/2007*. https://www.finlex.fi/fi/laki/ajantasa/2007/20070061 (accessed 20 September 2019) [in Finnish].
23. Kanta Services. *My Kanta Pages*. https://www.kanta.fi/en/my-kanta-pages (accessed 20 September 2019).
24. Jormanainen V *et al*. Half of the Finnish population accessed their own data: comprehensive access to personal health information online is a corner-stone of digital revolution in Finnish health and social care. *FinJeHeW* 2019; 11: 298–310.
25. Ministry of Social Affairs and Health. *Information to Support Well-Being and Service Renewal. eHealth and eSocial Strategy 2020*. 2015. http://julkaisut.valtioneuvosto.fi/handle/10024/74459 (accessed 19 November 2019).
26. Lämsä E *et al*. Pharmacy customers' experiences with the national online service for viewing electronic prescriptions in Finland. *Int J Med Inform* 2017; 97: 221–228.
27. Regional State Administrative Agencies. *Toimialueet*. http://www.avi.fi/web/avi/toiminta-alue (accessed 20 September 2019) [in Finnish].
28. Hyppönen H *et al*. *Electronic Services in the Social Welfare and Health Care Sector. Citizens' Experiences and Development Needs*. National Institute for Health and Welfare (THL). Report 33/2014.] 2014. http://www.julkari.fi/handle/10024/125597 (accessed 30 October 2019) [in Finnish with English abstract.
29. Hyppönen H *et al*. *Electronic Services in the Social Welfare and Health Care Sector 2017. Citizens' Experiences and Needs*. National Institute for Health and Welfare (THL). Report 3/2018.] 2018. http://www.julkari.fi/handle/10024/136258 (accessed 30 October 2019) [in Finnish with English abstract].
30. Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs* 2008; 62: 107–115.
31. Finnish Advisory Board on Research Integrity (TENK). *Ethical principles of research in the humanities and social and behavioural sciences and proposals for ethical review*. 2009; https://www.tenk.fi/sites/tenk.fi/files/ethicalprinciples.pdf (accessed 29 June 2020).
32. Official Statistics of Finland. *Survey on use of information and communications technology by individuals*. 2018. http://www.stat.fi/til/sutivi/2018/sutivi_2018_2018-12-04_tie_001_en.html (accessed 2 September 2019).
33. Kanta Services. *Instructions on sending a prescription renewal request*. https://www.kanta.fi/en/instructions-on-sending-a-prescription-renewal-request (accessed 13 November 2019).
34. Kanta Services. *Number of Users of My Kanta Pages by Municipality*. Blog 4.7.2019. https://www.kanta.fi/blogi/-/asset_publisher/1QjC602jKPR6/content/omakannan-kayttajat-kunnittain (accessed 22 May 2020).
35. National Institute for Health and Welfare. *THL's Morbidity Index 2014–2016*. http://www.terveytemme.fi/sairastavuusindeksi/index.html (accessed 22 May 2020) [in Finnish].
36. Greenberg AJ *et al*. Access to electronic personal health records among patients with multiple chronic conditions: A secondary data analysis. *J Med Internet Res* 2017; 19: e188.
37. Ministry of Social Affairs and Health. *Rational Pharmacotherapy Action Plan. Reports and Memorandums of the Ministry of Social Affairs and Health* 15/2018. 2018. http://julkaisut.valtioneuvosto.fi/handle/10024/160659 (accessed 30 October 2019) [in Finnish with English abstract].
38. Kanta Services. *Omakanta tutuksi*. https://www.kanta.fi/omakanta-verkkokoulu/#/?_k=oqbbyy (accessed 13 November 2019) [in Finnish].
39. Nokelainen H *et al*. Reasons for allowing and refusing generic substitution and factors determining the choice of an interchangeable prescription medicine: a survey among pharmacy customers in Finland. *BMC Health Serv Res* 2020; 20: 82.
40. Finnish Medicines Agency and Social Insurance Institution. *Finnish Statistics on Medicines 2017*; 2018. (accessed 30 October 2019).
41. Kanta Services. *Acting on Behalf of a Minor*. https://www.kanta.fi/en/acting-on-behalf-of-a-minor (accessed 20 December 2019).

Appendix 1

Table A1 Characteristics and differences between users and non-users of My Kanta among respondents who had the means to use the service (n = 914).

	User (n = 813) n (%)	Non-user (n = 101) n (%)	P-value
Gender (n = 911[1])			
Female	571 (70.3)	61 (61.6)	0.076
Male	241 (29.7)	38 (38.4)	
Age (years) (n = 881[1])			
18–34	50 (6.4)	4 (4.1)	0.526
35–59	236 (30.1)	32 (33.0)	
60–74	391 (49.9)	44 (45.4)	
75-	107 (13.6)	17 (17.5)	
Education (n = 914)			
Basic education	127 (15.6)	21 (20.8)	0.473
Vocational degree	345 (42.4)	42 (41.6)	
Secondary school graduate	94 (11.6)	7 (6.9)	
Lower university degree	132 (16.2)	15 (14.9)	
Higher university degree	115 (14.1)	16 (15.8)	
Region (n = 912[1])			
Southern Finland	106 (13.1)	19 (18.8)	0.021
Southwestern Finland	109 (13.4)	23 (22.8)	
Western and Central Finland	154 (19.0)	20 (19.8)	
Eastern Finland	188 (23.2)	18 (17.8)	
Northern Finland	191 (23.6)	13 (12.9)	
Lapland	63 (7.8)	8 (7.9)	
Internet use (n = 914)			
Daily or on several days a week	771 (94.8)	71 (70.3)	<0.001
Once a week or less often	42 (5.2)	30 (29.7)	
Internet use to search for health-related information (n = 911[1])			
Yes	765 (94.2)	65 (65.7)	<0.001
No	47 (5.8)	34 (34.3)	
Chronic diseases diagnosed by a physician (n = 903[1])			
Yes	675 (84.2)	78 (77.2)	0.112
No	113 (14.1)	22 (21.8)	
Doesn't know	14 (1.7)	1 (1.0)	
Current use of regular prescription medicines (n = 868[1])			
0	86 (11.1)	11 (11.6)	0.088
1–2	255 (33.0)	36 (37.9)	
3–5	299 (38.7)	42 (44.2)	
6–9	109 (14.1)	6 (6.3)	
10-	24 (3.1)	0 (0.0)	
Mean number of medicines (standard deviation)	3.3 (2.9)	2.6 (1.9)	0.001

[1]Some respondents did not answer the question.